

CLAIMS

1. A position detector comprising:
 - a detected element having a pattern for generating a position signal formed thereon; and
 - a sensor for detecting the position signal based on the pattern by receiving an electromagnetic wave generated on the detected element by light irradiation, characterized in that:
the pattern is visibly or invisibly formed like gradation to be able to send out the electromagnetic wave of a wavelength continuously different according to a position on the detected element to the sensor side.
2. The position detector according to claim 1, characterized in that the pattern is one of the following:
 - (I) a pattern for receiving light from a light emitting element forming a part of the sensor or provided separately from the sensor so as to reflect the electromagnetic wave of the wavelength different according to the position on the detected element onto the light receiving element forming a part of the sensor;
 - (II) a pattern for receiving light from a light emitting element forming a part of the sensor or provided separately from the sensor so as to transmit the electromagnetic wave of a wavelength different according to the position on the detected element to a light receiving element forming a part of the sensor;
 - (III) a pattern for receiving light from a light emitting element forming a part of the sensor or provided separately from the sensor so as to generate the electromagnetic wave of the wavelength different according to the position on the detected element by means of fluorescence excitation or the like and irradiate a light receiving element forming a part of the sensor therewith.

3. The position detector according to claim 1 or 2, characterized in that:

the sensor has a wavelength separating portion such as a spectral spectrograph or a primary color filter for separating the electromagnetic wave from the detected element into the wavelengths; and

the position is detected based on the wavelengths thereby separated and obtained.

4. The position detector according to any one of claims 1 to 3, characterized in that:

the detected element is in a disk-like form to have a position in a rotation direction detected; and

a pattern for generating the electromagnetic wave of a different wavelength to be sent out to the sensor side is formed in the rotation direction so as to detect a rotational position of the detected element by means of such a configuration.

5. The position detector according to any one of claims 1 to 3, characterized in that:

the detected element is in a parallelogrammic form to have a position on a coordinate plane detected; and

a pattern for generating the electromagnetic wave of a different wavelength to be sent out to the sensor side is formed in a quadrant thereof so as to detect a coordinate position of the detected element by means of such a configuration.

6. The position detector according to any one of claims 1 to 3, characterized in that:

the detected element is in a spherical form to have a position on a spherical surface detected; and

a pattern for generating the electromagnetic wave of a different wavelength to be sent out to the sensor side is formed on the spherical surface so as to detect a position on the spherical surface of the detected element by means of such a configuration.

7. The position detector according to any one of claims 4 to 6, characterized in that the detected element has an origin for position detection provided thereon by a part of the pattern or a pattern separately provided so as to be capable of detecting an absolute position.

8. The position detector according to any one of claims 4 to 7, characterized in that the pattern is formed by colors or coloring continuously changing according to the position.

9. The position detector according to claim 8, characterized in that the pattern consists of multiple basic colors provided at different positions on a detected position and colors placed continuously between adjacent two of the basic colors and based on a color mixing ratio between them.

10. The position detector according to claim 9, characterized in that the basic colors are two or more primary colors including the cases of the three primary colors of colored rays or three primary colors of colored materials.

11. A detected element having a position signal generating pattern for generating an electromagnetic wave by light irradiation formed thereon, characterized in that the pattern is visibly or invisibly formed like gradation to

be able to generate the electromagnetic wave of a wavelength continuously different according to a position on the detected element.

12. The detected element according to claim 11, characterized in that the pattern is formed like gradation by color or coloring continuously changing according to the position and is in a disk-like form to have a position in a rotation direction detected.

13. The detected element according to claim 11, characterized in that the pattern is formed like gradation by color or coloring continuously changing according to the position and is in a parallelogrammic form to have a position on a coordinate plane detected.

14. The detected element according to claim 11, characterized in that the pattern is formed like gradation by color or coloring continuously changing according to the position and is in a spherical form to have a position on a spherical surface detected.

15. The detected element according to claim 11, characterized in that the pattern is formed like gradation by color or coloring continuously changing according to the position and is in a belt-like form to have a position in a certain direction detected.

16. The detected element according to claim 11, characterized in that the pattern is formed like gradation by color or coloring continuously changing according to the position and is in a cylindrical form to have a position in a rotation direction detected.